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ABSTRACT

Much of the current work in reading comprehension features the idea that reading for meaning involves metacognitive activity of comprehension monitoring, which entails keeping track of the success with which one's comprehension is proceeding, ensuring that the process continues smoothly, and taking remedial action if necessary. The resurgence of interest in the topic of reasoning or thinking reflects a paradigm shift in the field of learning psychology. Thus, although metacognition is not a new field of study, the new concepts and methods used in current research should eventually have a greater impact on education than earlier work on the same topic did. There is now sufficient evidence from studies of children that less able readers are not particularly adept at monitoring their understanding of what they listen to or read. Research has shown that approaches teachers can use to improve these children's metacognitive strategies include (1) providing instructions to predict outcomes that require a reader's active involvement and constructive thinking, (2) encouraging children to integrate their prior knowledge with story content, and (3) training students to monitor their understanding by asking themselves questions as they read. Teachers should be cautioned, however, that an overt demonstration of an understanding of metacognitive skills is unnecessary. Rather, the teacher should model good questions, provide examples of strategies students might use, and provide many opportunities to apply the strategies to various types of reading materials. (HOD)

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CENTER FOR THE STUDY OF READING

Technical Report No. 263

METACOGNITION FROM THE HISTORICAL CONTEXT OF TEACHING READING

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Metacognition from the Historical Context of Teaching Reading

It is instructive to examine the origins of new theoretical approaches to reading comprehension and its instruction. For what is often revealed is that touted breakthroughs to a new understanding of the reading process are actually reformulations of older concepts, sometimes containing little more than a shift in emphasis or another set of defining terms. Moreover, these acclaimed breakthroughs are almost invariably accompanied by an invigorated sense of optimism about improving children's reading. Such speculation is nevertheless an instructive activity because in analyzing the history of an idea, present day understandings can be expanded or clarified.

This exercise has been carried out with metacognition, a concept that has recently captured the interest of many educational theorists. What is the history of this notion; how did it play a role in earlier views of reading comprehension? Why were earlier views of its importance ineffective in generating research and in reading instruction implementation? Why is there such a surge of interest in metacognition recently? This article focuses on these questions.

Much current work in reading comprehension features the idea that "reading for meaning involves that metacognitive activity of comprehension monitoring, which entails keeping track of the success with which one's comprehension is proceeding, ensuring that the process continues smoothly, and taking remedial action if necessary" (Baker & Brown, 1980). Furthermore, because metacognition is assumed to play an essential role in understanding written text, knowing what metacognitive strategies are in the context of school instruction and how they might best be taught to

children are essential to constructing an appropriate framework for comprehension instruction (Brown, Campione, & Day, 1981; Collins & Smith, 1980).

History of Metacognitive Research

An examination of the early reading literature shows that metacognitive constructs have been described since the beginning of this century. Huey (1968) defined reading as "thought-getting and thought manipulating," Thorndike (1917) argued that "reading is reasoning," and Gray (1925) stated "reading is a form of clear, vigorous thinking." In the 1950s and 1960s researchers claimed that one aspect of reading comprehension involves "critical reading" (Russell, 1956; Smith, 1965; Sochor, 1959; Wolf, Huck, & King, 1967). Why, then, did these constructs not play a more central role in reading instruction?

Perhaps teachers were unable to put experts' exhortations into practice because of the vagueness of their suggestions. Rather than a clear description of systematic instructional techniques, directions to teachers discussed what behavior readers needed to learn. For example, Gray (1925) offered the following as an idealization of how a reader comprehends: "He directs attention to the content, he associates meanings with symbols, he associates the elements of meaning into related wholes, he recognizes the relative importance of ideas, he studies the context or other sources for meanings which are not familiar, he analyzes the content of what he reads, he weighs values and makes judgments, and he fixes in mind those meanings which are of value to him" (p. 16).

This stands in contrast with Collins and Smith (1980), for example, who explain particular steps teachers might follow in teaching metacognitive

strategies, and with the specific procedures described by Andre and Anderson (1978-1979), who devised and evaluated a self-questioning study technique to promote learners' active involvement in reading. It also differs from the detailed descriptions provided by Bransford, Stein, Shelton, and Owings (1980), who successfully taught fifth graders to integrate their own world knowledge with the factual content provided in a passage to make that content more meaningful and thus more accurately recalled.

The assertion that teachers in elementary schools engage children very infrequently in metacognitive activities that are associated with reading comprehension is supported by classroom observation research. For example, Mason (1981) found that during the reading instruction period in 10 third-grade and 10 fourth-grade classes, only 1 percent of the time was spent interpreting text information. Similarly, Durkin (1978-1979), observing 24 fourth-grade teachers, found that less than 1 percent of the instructional time was devoted to prediction of text information or to understanding of text meaning. In neither study was there evidence of attention to text monitoring while reading or to techniques for clearing up misunderstandings.

The decline of an emphasis on text interpretation and text monitoring is probably an aftermath of behaviorism, a theoretical approach that predominated from the 1940s through the 1960s. Theorists as well as practitioners strove to be exact, to deal with observable skills and behaviors, and to concentrate on facts and details rather than on judgments and interpretations. This behaviorist thrust led to lesson plans and procedures that emphasized skill hierarchies over more loosely conceived metacognitive constructs, questions devoted to text details rather than

implied meanings, and workbook exercises that stressed drill and practice instead of textual meaningfulness.

The resurgence of interest in the topic of reasoning or thinking in relation to reading has occurred principally because the field of learning in psychology has undergone a paradigm shift. There has been a return to the study of thinking, reasoning, and reflection. However, there are new aspects to this work. With the aid of relevant work in computer science and linguistics, cognitive psychologists are able to express their constructs with more precise formulation and to make use of more powerful experimental procedures. Thus, although metacognition is not a new field of study, the new concepts and methods used in current research should eventually have a greater impact on education than earlier work on the same topic did.

Children's Comprehension Problems

There is now sufficient evidence from studies of children that less able readers are not particularly adept at monitoring their understanding of what they listen to or read. For example, Markman (1977) showed that first graders have much more difficulty than third graders in evaluating their understanding of task instructions. In a later study, Markman (1979) found that third-grade and sixth-grade children, after being asked to listen to and evaluate short essays, often missed explicit contradictions in the text. Sixth graders were somewhat superior to third graders, particularly when they were warned beforehand that the text contained problems.

Garner (1981), who asked students attending a reading clinic to mark sections of text that were difficult to comprehend, found that the text sections containing inconsistent information were likely to be rated as

comprehensible, whereas sections containing hard vocabulary terms were often marked as more difficult to understand. As described in Markman (1980), Capelli and Markman had two groups of third and sixth graders read 10-sentence stories that contained one anomalous sentence. Both groups were timed, sentence by sentence. One group was told to report immediately any sentence that did not make sense, and the other group was told to report the anomalies when they finished reading the whole story. Although the group differences were negligible, children, especially the older ones, took longer to read the anomalous sentences, even though they seldom claimed to notice a problem. It seems that, although children apparently puzzled over or reread anomalous material, they did not realize that the text information was at fault.

Approaches to Improving Children's Metacognitive Strategies

Instructional Approaches

Given the difficulty children have in detecting text problems, how can educators improve their comprehension? Is there evidence that instruction can alter or improve children's metacognitive strategies? Markman and Goren (1981) told one group of children to find problems in text, another group to find some statements that were not true, and a third group to find some statements that were inconsistent. The second and third groups were also shown examples of untrue or inconsistent statements. The results of the study indicate that if children are given specific instructions about the types of problems in text to monitor, their comprehension strategies can be improved. Children are then able to adjust their standard of evaluation.

Using another instructional approach, Anderson, Shirey, and Mason (1981) had one group of third-grade children focus on accurate reading of

sentences while another group received instructions to "tell what might happen next." In one study children heard sentences, read sentences aloud, or read them silently in individual sessions; in the other study the children took turns reading all sentences aloud in groups of four. In both studies instructions to predict outcomes, which required a reader's active involvement and constructive thinking, facilitated recall of the sentences more than did instructions to read carefully.

Approaches that Integrate Text with Prior Knowledge

A study by Au and Mason (1981-1982) indicated another approach to improving comprehension. One group of first-grade students were taught by two teachers who used quite different teaching styles. One teacher elicited predictive statements and personal experiences that were related to the stories being read; the other emphasized oral reading and recall of text details. Analyses of the lessons indicated that the teacher who encouraged the children to integrate their prior knowledge with story content better maintained the children's attention, kept the children on task for a greater portion of the lesson time, and increased their text-related statements. On all measures of student learning, the teacher who emphasized oral reading and recall of text details was less effective.

In another comparison study, Hansen (1981) compared typical basal reading instruction procedures with procedures that also focused on strategies for integrating text with prior knowledge. The inferential comprehension of children who received strategy training was superior to that of children who did not receive the training.

Self-questioning Approaches

Another approach to improving comprehension has been to train readers to monitor their understanding by asking themselves questions as they read. Using this approach with high school students, Andre and Anderson (1978-1979) found it particularly effective for lower performing students. Singer (1978) showed that student-generated questions were more effective aids to comprehension than were teacher-generated questions. Wong and Jones (1981) were also successful in training learning disabled junior high school students to answer their own questions after identifying main points in a passage. In investigating procedures for instructing students to use metacognitive strategies, Palincsar, Brown, and Armbruster (in preparation) found that treatment procedures were most effective if corrective feedback (guiding students back to information in the passages where answers to comprehensive questions could be found) preceded strategy training (tutor and tutee would take turns paraphrasing a main idea, discussing classification of text information, predicting possible comprehension questions, predicting text information not yet read, and commenting on text confusions).

These intervention studies suggest that procedures that specifically teach or model a metacognitive strategy and provide opportunities for children to practice that strategy result in increased comprehension of text. Without instruction, many children apparently do not realize how valuable strategies are. Several ways to encourage children to adopt different strategies have been suggested by the intervention studies described in this section. Capelli and Markman (1982) have speculated about additional procedures. What is most important, however, is for

educators to realize that action must be taken to help children acquire effective metacognitive strategies.

A Word of Caution About Implementation of Instruction in Metacognition

Brown (1980) has argued that one aspect of comprehension monitoring, the task of clearing up comprehension failures, requires "deliberate conscious strategic intervention" on the part of a reader, which is quite different from "other intelligent processing that goes on below the level of conscious introspection" (p. 455). However, Baker and Brown (1980) say, "although mature readers typically engage in comprehension monitoring, it is not often or even usually a conscious experience" (p. 9). Whereas it is not disputed that readers are at times aware of and actively plan and select strategies to use when they encounter a comprehension difficulty, it is not clear that the metacognitive activity is always deliberate. Hence the instructional consequences for children have yet to be established. For one, a distinction probably needs to be made between the reading behavior of children who are good readers from those who are poor readers. Many strategies used by good readers when dealing with their comprehension failures may not be implemented at a conscious level. These children, like the "mature" readers described by Baker and Brown (1980), may not need to stop and think about what they should do to clear up their confusion; they may merely use a strategy (e.g., rereading) that has been effective in the past. Only when their comprehension difficulty is serious or the text is more complex may good readers need to reflect consciously on their misunderstanding and plan what they might do to resolve it. Poor readers, on the other hand, may not realize when they do not understand, or when they are aware of their lack of understanding, do not know how to remedy the problem.

Procedures for Poor Readers

Because of these differences between good and poor readers, a word of caution is in order regarding classroom implementation of research on metacognition. Poor readers may need to be encouraged constantly to monitor their understanding of the whole text. As they are reading, teachers might ask them, for example, to predict each new section of text or to summarize or interpret sections they just read. When it is evident that they are not comprehending, teachers can help the students retrace their steps to determine where the comprehension problem occurred and then discuss with them the reasons for the problem. An appropriate remedial strategy that they might use in the future can also be demonstrated and discussed. Students' application of the strategy can be checked by asking them comprehension questions on other material.

Procedures for Good Readers

Different procedures probably should be used for good readers because they can clear up most of their comprehension failures. Interrupting good readers frequently while they are reading to check on their understanding or questioning them about techniques used when a comprehension problem occurs could in fact be harmful; it could actually interfere with their effective, but unconsciously implemented, reading strategies. In fact, Wong and Jones (1981) found that a training procedure that was effective for learning disabled students was counterproductive for normally achieving students. Only when serious comprehension difficulties are evident should good readers' reading be interrupted and an appropriate remedy discussed. To introduce an advanced remedial strategy, particularly difficult materials might be assigned.

General Cautions

Teachers who believe that students' conscious awareness of the rules they are applying or strategies they are using will ensure success may misguide their students. A classic example is the Bateman and Zidonis (1964) study, which investigated the effects of students' knowledge of generative grammar on their writing. Bateman and Zidonis claimed that teaching students grammatical rules so that they could consciously apply them while writing would increase the complexity of the sentences they produced. O'Hare (1971, 1973) showed 7 years later that students' awareness of the grammatical rules was irrelevant; it was students' practice with applying the sentence-combining techniques that produced the desired results. Similarly, in the teaching of word recognition skills, teachers often have required children to be aware of much more than is necessary to decode a word (e.g., the short vowel rule in consonant-vowel-consonant syllables, or labels, such as "hard" and "soft" c).

The present enthusiasm over metacognition could result in a similar misdirection--teachers might teach students about metacognitive skills rather than lead students to use these skills. The authors are concerned with how Brown's statement that metacognitive skills require "deliberate conscious strategic intervention" may be translated into practice. Many teachers might require students to describe the strategies they are using while reading (and perhaps use worksheets that require students to identify which strategy would be most appropriate for a particular situation). This overt demonstration of understanding is unnecessary. Instead, as Mason (1981) and Durkin (1978-1979) have stressed, teachers should help students focus on the meaning of the whole text. When they fail to comprehend at

this level, the teacher ought to model good questions, giving them examples of strategies they might use, and providing many opportunities to apply these strategies to various types of reading materials.

Some students will undoubtedly need more than modeling and application in order to be able to use a particular strategy effectively. For these students, the teacher may need to break the strategy into smaller steps and provide guided practice with each step. Once each step has been learned, students will need many opportunities to read and interpret what they have read so that they can integrate the steps into a coherent whole.

Teachers will know through questioning whether their students are applying the various strategies. Requiring students to demonstrate conscious awareness of their strategies should not be necessary. Flavell and Wellman (1977), in fact, make this very point regarding the "metamemory-memory behavior link" (p. 28).

Summary

Metacognition is not a new concept; however, its current importance is due to the more precise descriptions of metacognitive behavior that researchers are now using, descriptions that were absent in previous work on the topic. Researchers have provided evidence that modeling, or explicitly teaching various metacognitive strategies, does improve the comprehension of students. Teachers should not require children to demonstrate their conscious awareness of their comprehension monitoring strategies.

Teaching that emphasizes the purpose in reading and involves modeling, guided practice, and opportunities for using various comprehension strategies, from the primary grades on, should ensure that most children will be actively

involved in their reading. As Jenkinson (1965), one of William Gray's doctoral students in the 1950s, so well stated, "An attitude of inquiry must be instilled from the beginning . . . Frequent discussions, not merely the recapitulation of facts, but talking about the various possible ideas which are inherent in what they read or hear must be fostered (p. 112-113).

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